

**ATTITUDES OF SECONDARY SCHOOL STUDENTS TO  
PHYSICS IN EGOR LOCAL GOVERNMENT AREA OF EDO  
STATE**

**BY**

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**A RESEARCH PROJECT SUBMITTED IN THE DEPARTMENT OF  
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REQUIREMENT OF THE AWARD OF BACHELOR OF SCIENCE  
EDUCATION (PHYSICS) DEGREE**

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## **DEDICATION**

This project research is specially dedicated to my parents ,  
Mr and Mrs . Okafor Ede and to my late brother , Mr. Innocent  
Chukwudi Okafor.

## **APPROVAL**

I hereby certify that I approve this research project as adequate in scope and quality for the partial fulfillment of the Bachelor of Science in Education ( Physics ) degree .

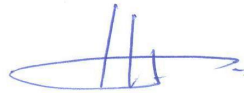
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## CERTIFICATION

This project has been read and certified by the department of Educational Psychology and Curriculum Studies, Faculty of Education, University of Benin. This is in Partial fulfillment of the requirement for the award of Bachelor's Degree in Education Physics.



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## **ABSTRACT**

Attitudinal attributes of students is one of the numerous factors that facilitates or inhibits the teaching and learning of physics in secondary schools. This factor is mostly expressed in the behavior of the students to the learning of the subject. Attitudes and learning are twin concepts. Their relationship, if properly managed by the physics teacher, could serve as a veritable tool in engineering the students' behavior towards higher academic achievement in physics, thereby, boosting their interests in the subject .This project examines the attitudes of secondary school students to physics.

In addition, the study also examines the influence of physics teachers' attitudes on the students' attitudes to physics. Most secondary school students find physics very difficult especially the calculations aspect of the subject. Majority of this students usually score low grade in physics. Physics is often seen by secondary school students to be more difficult when compared to other science subjects including biology and chemistry. This development has instilled fear in the minds of the students. It is the prime duty of the physics teacher to clear this notion from the of the students. He needs to invest his diverse professional skills and competence, expertise, creativity and sacrificial efforts in order to effectively and efficiently present the subject in manner that would be most interesting and captivating to the students.

More importantly is the urgent need for Nigeria Government to readdress the various limitations to the teaching and learning of physics in particular and science in general in secondary schools across the Nation as she strives to attain a high level of scientific and technological advancement in the nearest future. Such limitations include inadequate facilities and equipments for conducting physics practicals , lack of suitably qualified physics teachers in most secondary schools as well as lack of supervision of instructional activities involving physics teacher professional assignments in schools. If appropriate measures are fully taken by the relevant authorities to address this in adequacies, it could of great assistance in repositioning the structure and nature of the instructional process in physics classroom and could serve as a step towards promoting the attitudes of the students to physics. This is the basis on which this study was carried out to examine the attitudes of secondary school students to physics.

## **CHAPTER ONE**

### **1.0. INTRODUCTION**

Physics is a core science subject. It is one of the most fundamentals of sciences and gives students in secondary schools a great challenge especially when it comes to the mathematical aspect of the subject .

Secondary school Students' attitudes to physics has not been too favourable. This could probably be as a result of the difficulty encountered by students offering physics in secondary schools .This research is directed in manner that will uncover this difficulties and suggests possible ways of dealing with these problems.

### **1.1 BACKGROUND TO THE STUDY**

Physics is a natural science that deals with matter and energy and the interactions that occurs between them. It is a core science subject. The role of physics in modern scientific and technological advancement cannot be overemphasized. It is linked with so many aspects of technology and engineering which include light, sound , heat, electronics, space technology among others. There is therefore,

no doubt that physics is vital to human existence. Hence, the need for adequate provision of the necessary facilities and equipments for the effective and efficient teaching and learning of the subject in secondary schools across Nigeria.

Moreso, physics being an activity oriented subject is best taught with experimentation technique. This method requires laboratory equipments which are fast becoming grossly inadequate in Nigerian secondary schools. The few available facilities are being over stretched due to explosion in the population of secondary school students in recent times. The need, therefore arises that more facilities be provided in public and private secondary school laboratories across Nigeria to aid the advancement of the teaching and learning of physics in the country.

In addition, Nigeria as a developing nation has and is still presently being infiltrated with scientists and technologists from across the west. This development has led to the criticism from several quarters on the level of attainment of the goal of science teaching as highlighted in the National Policy on Education(2004).This criticism has triggered the persistent and

consistent search for more pragmatic, result-oriented and purpose-driven instructional techniques that would aid physics teachers driving in the various concepts, ideas ,principles and methodologies in physics into the understanding of secondary school students in Nigeria.

Physics is conceived by most secondary schools students as a very difficult subject to pass. some students even go to the extent of seeing it an insurmountable obstacle in science. A study by Owolabi (2004) revealed that the performance of Nigerian secondary schools students in ordinary level physics is generally poor. It normally attracts a few numbers of students unlike other science subjects. Secondary school students do not generally like physics lessons and do not have preference for the subject. It used to be conception but now obvious from the general performance of students that they (students) are finding the subject difficult both as a subject and as a scientific discipline. It is usually avoided because of its negative reputation. This notion in students has given physics a 'bad ' image in recent times and has induced in the students an unfavorable attitudes towards the study of physics both as a subject

in secondary schools and as a profession. If this trend is properly addressed on time, physics as a profession may suffer a serious setback in the future.

However, physics teachers in secondary school must be fully aware of their position in tackling these enormous challenges confronting the subject in their domain. They (physics teachers) must be equipped with facts, facilities and enabling environment that would gear them towards investing their best in the subject. As a matter of urgency, the Government of Nigeria must do all within their power to wake the teaching of physics in the country as majority of the industries are gradually finding it difficult to power their machines due to the inability of the power sector to meet the power need of the industrial sector. Physics teachers in secondary schools must be equipped with the required tools for the effective communication of the knowledge in physics to the students. They must put in their best in teaching the subject in a manner that it will be appreciated by a large number of students. If this is properly done, it will boost student's understanding of the various concepts and ideas in physics which will invariably increase their level of interests in the subject.

and consequently help the students in developing positive attitudes towards the study of the subject. This project research is designed to critically look into these challenges as it affects the attitudes of students to the subject and make necessary recommendations for physics teachers in secondary schools.

## **1. 2 STATEMENT OF THE PROBLEM**

The numerous obstacles facing the teaching of physics in Nigeria which include low level of competence, unprofessional conducts, lack of creativity, poor funding, inadequate and teaching facilities has led to the dwindling attitudes of secondary schools students to the subject. In addition, the attitudes of secondary school students to physics related professions has not being encouraging. This has contributed to the massive poor performance of secondary schools students in the subject even in the presence of quality instruction.

Ivowi ( 1997 ) asserted that students poor performance in physics has been attributed to poor teaching methods , unqualified and inexperienced teachers , poor students attitudes to physics poor learning environment and gender effect.

It is on this premise that this project research was designed to examine the attitudes of secondary schools students to physics.

### **1.3 PURPOSE OF THE STUDY**

The purpose of the study is to investigate the attitudes of secondary schools students to physics. It also examines the diverse views of students to professional careers in physics.

In addition, the research is designed to make recommendations that would be of invaluable assistance to physics teachers in secondary schools and other stakeholders in the education sector towards fostering the positive attitude of secondary school students to physics.

### **1.4 RESEARCH QUESTIONS**

In order for the aims and objectives of the study to be achieved, the following research questions were raised;

1. What is the attitudes of secondary school students generally to the learning of physics ?
2. Do the attitudes of secondary school students to physics affect their interests in physics related professions ?

3. Do the attitudes of secondary school students to physics result from their background in science ?

.Are the attitudes of secondary school students to physics generally the same with their attitudes to other science related subjects ?

4. Are the attitudes of secondary school students to physics influenced by the physics teacher-student relationship?

### **1.5 SIGNIFICANCE OF THE STUDY**

The study is aimed at investigating the attitudes of secondary school students to physics. The result obtained from this research is hoped to assist physics teachers in secondary schools as they seek new instructional strategies that would enhance a more efficient and effective teaching and learning of physics in Nigeria. This would assist in boosting the interests of students in physics, thereby, amplifying their academic achievement in the subject. It is also hoped that the research would aid the physics teachers in secondary schools across Nigeria in their bid to adopt new technologies and modern laboratory and classroom facilities in their persistence and

painstaking strive towards the attainment of improved instructional processes in physics.

More so, the usual practice in physics lessons where the physics teacher exercises absolute dominion of the entire instructional process at the expense of student's participation as in the case of the lecture method has attracted wide criticism from various stakeholders in the education industry. The study is aimed at addressing this challenge.

Finally, it is hoped that this research would be of brilliant aid to Federal, State and Local Governments of Nigeria in their relentless effort to enhancing the realization of the goals of science teaching in the country as enshrined in the National Policy of Education ( 2004 )

## **1.6 SCOPE AND DELIMITATION OF THE STUDY**

Due to financial huddles and the limited time made available for the study, the researcher limited the study only to secondary school students of the four selected schools in Egor Local Government Area of Edo State . The research is confined within the scope of the attitudes of secondary school students to physics.

## **1.7 LIMITATION OF THE STUDY**

Time and finance were the major limiting factors during the process of getting and accessing relevant data, literature, journals, texts among others for the research.

In addition, the work load associated with the administration and retrieval of the questionnaire constituted another challenge to the researcher .

## **1.8 ASSUMPTION OF THE STUDY**

Based on the research work carried out, the following assumptions were made.

Secondary school students constituted the population under study. These students are the valid source of data used in this research work. Also that the respondents gave valid and unbiased responses to the items in the questionnaire. In that the sample drawn was a true representative sample of the population under investigation.

## **1.9 DEFINITION OF RELATED TERMS**

- i. **ATTITUDES TO PHYSICS** : The feelings or dispositions of an individual towards physics .
- ii. **PHYSICS INSTRUCTION**: The practice of teaching physics.
- iii. **PHYSICS INSTRUCTIONAL AIDS**; Teaching materials and resources employed by the physics teacher in facilitating the teaching and learning of physics.
- iv. **PHYSICS TEACHING** : Physics teaching comprises all efforts and strategies applied by the physics teacher to ensure the transmission of knowledge in physics from him to the students
- v. **PHYSICS**: A branch of science that studies matter and energy and their interrelationship.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 INTRODUCTION**

In this chapter, I made a review of related literature to the research topic under investigation. The sub-headings under which literature was reviewed are;

- i. Concept of attitude
- ii. Concept of physics
- iii. Methods of teaching physics
- iv. Instructional aids for physics teaching
- v. Teachers' attitudes to physics
- vi. Summary of literature review

#### **2.1 CONCEPT OF ATTITUDE**

An attitude is an expression of favor or disfavor toward a person place, thing or event (Wikipedia,2011) . It is the way or manner one feels about someone else or something. The disposition of an individuals vary considerably from one individual to another which depend on their emotions,interests, background of the individual as well as their previous learning techniques ..Attitudes

are strong motivator or inhibitor to the learning of physics . The behavior of students is largely influenced by attitude towards their peer, parents, subject teacher or the subject or a combination of these factors. Students' beliefs and attitudes. have the potential to either facilitate or inhibit learning (Yara, 2009).

Moreso, many other factors could be responsible for students divergent attitudes toward the study of Physics .Attitudes are acquired through learning and can be changed through persuasion using various techniques. Attitude is a crucial term in the psychology of learning. Physics teachers in secondary schools should understand that their students are human beings and not computers garbages out whatever is garbage in at any point in time. They must realize that students form attitudes that can make or mar the instructional objectives. This would go a long way in providing an enabling atmosphere the effective and efficient teaching and learning procedures in a typical physics instructional process.

techniques. Attitudes, once established helps to shape the knowledge in the individual about persons, objects or subjects. Although, attitudes change gradually with time , people constantly

develop new attitudes modify previous ones when they are exposed to new information and new experiences (Adesina and Akinbobola,2005). Studies by researchers (including Soyibo, 1985and Adesoji,2008) reveals that students positive attitudes to science(physics) correlate highly with their performance. Adesoji reported that a number of factors have been identified as related to students' attitudes to science (physics). Such factors include teaching methods, attitudes of teachers, parental influence, gender , age , cognitive styles of students, career choice ,social view of science and scientists According to Jegede et'al (1992 ) , students performance in science is generally poor. Most secondary school students view physics with negative attitude. Majority of the science students would have preferred to skip the subject if it were possible. This development has painted the image of physics with a " bad look ".

According to Alao (1990 ) , there is positive correlation between attitude and performance in science of which physics is part of. At this juncture, it is noteworthy to say that achievement,

motivation and the interest of the in physics no doubt influences their attitudes toward the learning of physics.

## **2.2 CONCEPT OF PHYSICS**

Physics is a natural science that involve the study of matter and its motion through spacetime ,along with related concepts such as energy and force. It is a branch of science that deals with the study of matter and energy and the relationship that exist between them. More broadly, it is the general analysis of nature, conducted in order to understand how the universe behaves. Matter and energy are two fundamental concepts in physics whose behaviors are of utmost concern to physicists. Matter is defined as any substance that has mass and occupies space. the total quantity of matter or material in body defines the mass of the body.

Energy on the other hand is defined as the ability of a body to do work. It is the capacity of a physical system to transform its energy into useful work. The implication of this definition is that a body that possess no energy cannot do work. Energy is of various kinds. It can be kinetic, potential, light, chemical, nuclear, electrical, sound energies among others. Anything that is capable of doing

work has energy (Anyakoha, 2007). Energy can be converted from one form to another. This is illustrated by the law of conservation of energy.

According to the law of conservation of energy, the total energy of a system remains constant, though, energy may be transformed from one form to the other. In a typical lightning strike, 500megajoules of electrical potential energy is converted into the same amount of energy other forms, most notably light energy, sound energy and thermal energy (Wikipedia , 2011.). The standard unit of energy is the joules (j).

The general conception of physics by secondary school students is that of a difficult subject. Most students are unwilling to take the subject. This development is detrimental to the progress of science and in Nigeria. Science is the foundation upon which the bulk of the present day technological advancement is built. Nowadays, nations all over the world, including Nigeria are striving hard technologically and scientifically since the world is becoming more and more scientific each passing moment and all proper functioning of life depends greatly on science. The technology behind the operations

of vehicles, transistor radios clocks and wristwatches, electric bulbs among others primarily depend on the various principles of physics. From the foregoing, it can be said that man and physics are inseparable. Ogunleye ( 2000 ) observed that science is a dynamic human activity concerned with the understandings of our world. According to Owolabi ( 2004 ) , science can be defined as an integral part of human society . Physics, being a core science subject and the foundation of engineering and technology cannot be neglected by a nation whose vision is to bring in modern technology to the operations of its local industries and whose agenda include the of importation as against the exportation of goods and services. Several branches of physics has and is still being explored to better human life. The most recent application of physics is in space technology which involved the launching of satellites into outer space. Knowledge in space technology has made life easier and more pleasant. Global communication is no longer a dream. It is now easier to police the globe with the aid of space satellites. The whole world is taking advantage of this revolution to improve her economy.

Over the years, nations across the world have been using the knowledge of space technology to populate the space above the earth. The mysteries behind the enormous and continuous supply of energy from the sun is still being investigated by physics in the west.

### **2.3 METHODS OF TEACHING PHYSICS**

A teaching method or strategy comprises principles and activities designed for the purpose of carrying out instructional processes. According to Reginal et'al (2010), teaching strategy refers to an approach, method or a combination of carefully designed classroom interactions that could be followed meticulously to teach a topic, concept or an idea. There are various methods which have been used physics teachers globally to disseminate the concepts and ideas in physics to learners over the years. Some of which has proved their worth and has produced good feedback. Others have not yielded any meaningful outcome. Some of the methods usually applied by physics teachers to teach physics are gracefully discussed below.

George (2006) agreed with the assertion the attitudes is comprised of two components parts which are effective in dealing

with mental process. The kind of attitude to physics developed by the students influence to a considerable extent their learning abilities in physics even in the presence of other factors. An attitude of students to physics is subject to change if they are exposed to the rudiments of physics in a very interesting manner and using an efficient and effective approach to teach the subject. Bajah (1997) explained that the position and negative attitudes of students themselves have been suggested as a contributory factor to misconception. Physics teachers in secondary schools must be honest to themselves and hold fast their profession if they must realize their objectives in leading their students into brilliant attitudes to physics by taking valiant steps in redesigning their instructional processes in such a captivating manner that will usher their students into greater academic performance in physics. This would be a step in the right direction towards instilling the spirit and excitement of the subject in the minds of the students. A situation where the younger generation are finding a fundamental science subject like physics very difficult is detrimental to growth and development of science and technology in Nigeria. This is true as the present younger

generation would eventually emerge as scientists in the future. Secondary school students must be assisted to overcome the numerous circumstances they are passing through in p

### **2.3.1 LECTURE METHOD**

The lecture method, commonly referred to as the talk and chalk method has been the most popular method of teaching physics in virtually all the secondary schools in Nigeria. This method of teaching physics is suitable for a large group of students is the feature of most secondary schools in Nigeria. It is the traditional method of teaching physics that has being in use for quite a long period of time. In lecture method, the physics teacher dominates the entire instructional process. He speaks continuously and gives notes regardless of whether or not the students are in tune with the instructional process. The learners are rendered perpetually passive as they are left with no choice than to carefully listen to the teacher and take down note.

The lecture method creates a teacher-student relationship similar to master-servant relationship. It is a one-way method of communication. Physics, being a practically oriented subject, is best

taught using activity-based teaching method. This is the more reason for the wide criticism against the lecture method. As a result of the unfriendliness of the lecture method to the students and the emerging criticism that has questioned its efficacy as a method of teaching physics, other strategies are now being sort to enable for increased efficiency and effectiveness in physics classroom delivery. However, the modern expository method involves more than talking and reading about science for it allows some interaction between the teacher and the students in terms of asking and being asked questions on the topic of discussion (Akinbobola, 2006). This is not to say that the lecture method is not a good method of teaching physics. Suffice it to say that the method should not take the place of more practically oriented strategies of teaching physics such as the experimentation or laboratory method.

### **2.3.2 ENQUIRY /DISCOVERY METHOD**

The enquiry or discovery method is an instructional approach that involves the generation of information by the learners themselves. It is characterized by the following attributes;

Learner-centered, leader-facilitated, learner-active and learning process emphasis. Learners engaged in inquiry method are actively involved in the instructional process and are therefore, able to produce their own knowledge. Physics as a science subject is activity oriented and the suggested method for teaching it which is guided discovery is resource based ( NTI,2007 ) . The role of the physics teacher is to guide the students. Physics as a science subject is flooded with practical. This trait makes the subject to be misconceived by most students as very difficult when it is taught without any form of student's participation in the instructional process. In the guided discovery, the learner is in charge. The physics teacher acts as an adviser to the students.

The discovery method enables the students to build their own knowledge in physics through active participation. Guided discovery involves the students employing their process skills to generate content information. In this method of learning physics, teachers are released from the role of authority and giver of knowledge to become facilitator and co-investigator with the physics students. This aborts the usual notion that teachers are all knowing. The

adoption of the guided discovery teaching method will boost attitude of secondary school students to the study of physics.

### **2.3.3 LABORATORY/EXPERIMENTATION METHOD**

The laboratory method also referred to as the experimentation method is a teaching method which provides the students the opportunity to carry out experimental activity in the laboratory in order for them to verify the various principles in physics as explained in the classroom by the physics teacher. A well equipped laboratory with an experienced laboratory attendant coupled with a well informed physics teacher will go a long mile in helping the students develop a positive attitude to the learning of physics.

However, in Nigerian secondary schools, the reverse is the case. Some schools do not have laboratories. Most schools are characterized by ill equipped laboratories. In addition to the issue of poorly equipped laboratories, well trained physics teachers are scarcely found in most secondary schools. This constitutes a serious treat to the quality of instruction offered in secondary schools physics lessons across Nigeria. According to Okonkwo (2000), there are inadequate resources for the teaching of sciences in

Nigerian secondary schools. It is a well known fact that physics laboratory equipments are quite expensive in the emergence of the present day global economic crisis..To solve this problem, Nigerian Government must ensure an increase in budgetary allocation to her education sector. This will aid in the acquisition of the needed resources (both human and material). However, in the prevailing economic circumstances, a creative and resourceful physics teacher should supplement the few available apparatus by adopting the practice of improvisation. The application of this tradition would aid in increasing the number of local substitutes in place of the original equipments. Consequently, students' attitudes to physics would be positively influenced.

#### **2.3.4 DEMONSTRATION METHOD**

Another very important method commonly applied in physics lessons is the demonstration method. In the technique, the physics teacher shows the students the way and manner to efficiently and effectively utilize the various forms of laboratory equipments. The students are able to learn from the physics teacher who demonstrate the correct use of physics equipments to carry out an experiment to

their admiration. The demonstration method is substituted for laboratory experimentation on the condition that the laboratory is ill equipped.

Researchers such as Ogunleye (2000) and Obioha (2006) reported that science equipments in secondary schools are grossly inadequate, hence, the need for improvisation. In a situation where this is impossible, would be left with no other choice but to adopt the demonstration technique. This is probably the case with most secondary schools in Nigeria at present.

#### **2.3.5 DISCUSSION METHOD**

The discussion method is yet another fruitful technique of instruction in physics lessons.. It involves the exchange of ideas between the physics teacher and the students. It also allows the students to share ideas among themselves. The discussion method stimulates critical thinking in the students. To apply this strategy, the physics teacher starts by introducing a concept or an idea. He then proceed by asking the students some questions to task their memory concerning the topic of discussion. He is able to discern from the student's response, the various skills and perspectives brought in by

the students to the discussion. small group discussions can serve as a veritable tool for encouraging active participation by students who are uncomfortable, speaking in large groups and enabling students to gain knowledge from one another. The discussion method is one of the most challenging strategies for teaching physics. It demands a great deal of creativity and expertise on the part of the physics teacher. According to Chukwuemeka (1985), only effectively trained and professional science teachers can be expected to communicate the excitement of science and encourage curiosity in students.

There is therefore, a compelling need for physics teachers to continually seek more skills and knowledge in physics pedagogy so as to enhance their competence in dishing the subject in a manner that will be captivating and simplifying to the knowledge level of secondary school students.

#### **2.4 INSTRUCTIONAL AIDS FOR PHYSICS TEACHING**

Instructional aids or materials are resources used by the physics teacher to facilitate the communication between him and the students. According to Ibe (1998), an instructional material is an object or means of communication process that stores and distribute

human experience or knowledge, therefore, the totality of the information carrying devices. Human and materials make up instructional resources in teaching physics. He includes the entire instructional system which he enumerates to include the texts, student's guide and teacher's guide that are needed to reach the goals of any instructional unit, course of curriculum along with supporting activities and processes required to operate the system as it is designed to be operated. Some of the instructional materials which can be of great assistance to the physics teacher in secondary schools include textbooks, library media print, non-print and video tapes. Others are films, DVDs, computer software and instructional television programs.

Moreso, according to Ibe (1998), utilization of instructional materials associated with the function of the teacher as the manager of the instructional process it is important for the teacher to arrange the mechanics of the presentation and also plan to make the material meaningful to the audience. It takes the effort of a professionally trained physics teacher to carefully select the right teaching aid that will best suit a particular instructional purpose.

Textbook is the most commonly used teaching resource by physics teachers in secondary schools across Nigeria. Evidence has shown that instructional materials has attendant effect on student's learning. well informed physics teacher should be able to select and organize his instructional packages in a manner that will arouse the interests of the students and wake up their curiosity towards physics, thereby, boosting their positive attitudes to the subject

The usefulness of instructional aids in a typical physics lesson cannot be undermined. They provide detailed description that may not otherwise be known about how to put together or use a product. They also provide creative ideas to assist in the learning process. Instructional materials serve as the channel between the teacher and the students as he communicates the principles, concepts and ideas in physics to them (students). Instructional aids can also act as good motivators in the process of instruction. If the goals of science teaching as spelt out in the National Policy on Education (2004) must be realized, secondary schools across Nigeria must be properly and uniformly equipped to promote sound and effective physics instruction. Physics as a science subject is activity oriented and the

method for teaching it is guided discovery which is resource based as stated in National Teacher's Institute (2007). This implies that the of the various concepts in physics cannot be fully actualised in the absence of instructional aids.

## **2.5 TEACHER'S ATTITUDE TO PHYSICS**

An attitude is the state of mind of an individual with regard to an entity. The attitude of the physics teacher to physics is seen in the way or manner he handles the subject. Teachers play critical role in the instructional process and their attitudes to physics determine to a large extent, the attitudes of the students to the subject. Ogunleye (1993), observed that many students develop negative attitude to science learning probably as a result of the fact that teachers are unable to satisfy their aspirations. Teachers are expected to see themselves as part of the instructional aids as stated in Ibe (1998). Physics teachers must be aware that the potential of physics as a subject and its prospects as viable profession are largely dependent on their investment in the subject. Dedication and commitment is required of them in the discharge of their duty.

Moreso, in this period of inadequate laboratory equipment coupled with the attendant explosion in the enrollment of science students in secondary schools all over Nigeria, physics teachers must see themselves as the solution to the problems confronting the instructional process in physics. Adebimpe (1997) and Aguisiobo (1998) noted that improvisation demands adventure, creativity, curiosity and perseverance on the part of the teacher. This implies that a painstaking effort is required of the teacher even in the presence of a high level of competence if he must see himself as the sacrificial lamb in this perilous time of inadequate laboratory facilities and equipments. Unfortunately, some physics teachers possess negative attitude towards improvisation in physics lessons. To such teachers, improvisation is like a mere recreational activity ,a waste of time and energy and it is often not taken very seriously by them. They relax and assume that students can still learn effectively in absence of instructional facilities. Akinsola (2000) and Omosewo (2008) view attributes such as teacher's professional commitment, creativity, mechanical skills, initiative and resourcefulness as the human factors necessary for improvisation. Physics teachers in

secondary schools must be fully aware of these factors to enable them perform optimally in their profession.

## **2.6 SUMMARY OF LITERATURE REVIEW**

From the discussion so far, it is obvious that the attitudes of students to physics is a fundamental factor that must be taken into cognizance by the physics teacher who is the manager of the physics classroom. Management of secondary schools must be aware of this fact if they are to succeed in their goal of knowledge transmission in physics.

Nigeria, as a country to attain a level of scientific and technological advancement, it will be timely for her younger generation to imbibe a positive attitude to physics. It is noteworthy to realize at this juncture that physics is the hallmark of modern scientific inventions. This fact should be made available to the physics teacher, secondary schools managers and the students to equip them with the necessary information needed for full actualization of their potential in physics.

In addition, various strategies have been employed by physics teachers in secondary schools classroom instructions in physics.

The oldest and most popular being the lecture method. Others include experimentation method, demonstration method, inquiry method and discussion method. The choice of the method to used depend on the level of competence of the physics teacher, his knowledge and skills and his attitude. A carefully selected instructional method could facilitate student's understanding of physics, thereby boosting their positive attitude to the subject.

Also, the role of instructional aids in physics lesson is catalytic. It is widely accepted that a combination of audio and visual aids enable for quick understanding of a concept. Instructional aids facilitate the transfer of knowledge from the physics teacher to his students, thereby, fostering the positive attitude of the students to the learning of physics.

Lastly, the physics teacher must realize that his actions in the process of instruction is instrumental to student's learning of and their attitudes to physics.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 INTRODUCTION**

This research is undertaken to examine the attitudes of secondary school students in Egor Local Government Area to physics. The study is basically intended to investigate the influence of students' science background on their attitudes to physics. The study is also concerned with the analysis of the influence of the students' attitudes to physics on their choice of physics related professions.

In addition, the project aims at looking into the effect of the physics teachers' attitudes to physics on the students' attitudes to the subject. However, the study recommends to physics teachers in secondary schools, the various the various methods, strategies and useful skills that could be adopted to assist the students in developing positive attitudes to the learning of physics. This step could help in the pursuit for a greater efficiency in the teaching learning of physics in secondary schools.

This chapter comprises sub - headings which are research design, population of the study, sample and sampling techniques , instrumentation ; validity of instrument , reliability of instrument , method of data collection and method of data analysis.

### **3.1 RESEARCH DESIGN**

This research is a descriptive type. It examines the attitudes of secondary school students to physics. The study was carried out in Egor Local Government Area of Edo State. In this research work, the opinions of the respondents were sort by the administration of well structured questionnaires designed to contain four point scale which are;

SA for strongly Agree, A for Agree, SD for Strongly Disagree, D for Disagree.

Nevertheless, the research was limited to some selected secondary schools in Egor Local Government Area of Edo State. This was basically due to inadequate finance and time.

### 3.2 POPULATION OF THE STUDY

The population of this study include all the science students in secondary schools across Egor Local Government Area of Edo State.

In this research, four schools were selected in Egor Local Government Area. The selection was carefully done to allow the inclusion of certain features such as nature of school system, class size, absence or presence of standard physics laboratories, and quality of physics teachers.

The selected schools represent the whole science students in senior secondary schools across Egor Local Government Area of Edo State.

**TABLE I: Selected secondary schools in Egor Local Government Area of Edo State.**

<b>S/No</b>	<b>SCHOOLS</b>
1.	BRAINS SECONDARY SCHOOL
2.	DISCOVERY GROUP OF SCHOOLS
3.	EDO BOYS COLLEGE
4.	USELU SECONDARY SCHOOL

The four secondary schools enlisted in table I above were carefully selected so as to obtain a representative sample of the secondary schools in Egor Local Government Area of Edo State. In addition, a deliberate attempt will be made to ensure equal treatment of the sampled schools as much as possible.

### **3.3 SAMPLE AND SAMPLING TECHNIQUES**

A sample is a carefully selected but randomized elements from a group of elements to represent the group.

Nevertheless, the sample for this study comprises four selected secondary schools in Egor Local Government Area of Edo State. A total of eighty respondents, twenty from each school were randomly selected. This chosen sample will, therefore, be representative sample of the entire population under investigation. Conclusion and inferences will be drawn from the findings gotten from them.

### **3.4 INSTRUMENTATION**

The research instrument adopted in this study was survey based on the research questions drawn from the research topic under investigation.

Nevertheless, in the process of data collection, items in the form of structured questionnaires were used whereby the respondents choose or tick on one of the four available options provided in the instrument. The questionnaire was designed in such a way that items or information required from respondents were minimal to allow for quick response and return of the instrument.

#### **3.4.1 VALIDITY OF INSTRUMENT**

The instrument adopted for this research was examined by experts in the department of Educational Psychology and Curriculum Studies, Faculty of Education, University of Benin. This experts cross checked the various items, standardized and endorsed them as good enough to solicit the required data for the purpose of this study.

#### **3.4.2 RELIABILITY OF INSTRUMENT**

The reliability of the instrument was tested using the test – retest method. The data obtained was determined using Crombach Alpha reliability test. It was found to be 0.78.

### **3.5 METHOD OF DATA COLLECTION**

In the process of data collection for the study, the administration of the instrument was limited to the sampled secondary schools in Egor Local Government Area. The instrument was structured in a pattern that will enable the respondents only the option that suits his or her opinion on the topic.

### **3.6 METHOD OF DATA ANALYSIS**

In this research, the responses from the students as seen from the result of the questionnaire items will be presented and analysed in tabular form using simple percentage.

The analysis will serve as instrument for providing answers to the research questions raised in chapter one to guide this study.

## **CHAPTER FOUR**

### **DATA PRESENTATION , ANALYSIS , INTERPRETATION OF RESULT AND DISCUSSION OF FINDINGS**

#### **4.0 INTRODUCTION**

This chapter deals with the presentation of data. Information collected from the copies of questionnaire issued to the respondents is presented in simple percentages.

However, a total of eighty copies of the questionnaire were issued to students of four selected secondary schools in Egor Local Government Area of Edo State. Twenty copies of the questionnaire were given to each of the four sampled schools. The completed copies of the questionnaire were collected from the students who served as the respondents.

Moreover ,this research was limited to senior secondary school 2 and 3 due to limited resources in terms of time and money.

#### **4.1 DATA PRESENTATION AND ANALYSIS OF RESULT**

The attitude measuring scale was made up of twenty items with four likes - type option. A four point scale was used. It ranged from:

S.A: Strongly Agree , A : Agree, S.D: for Strongly Disagree ,  
D: for Disagree .

The total percentage score for each attitude indicates the level of favourable attitude in that category . The research questionnaire was based on five different facts which are;

- ❖ Students' general attitudes to the learning of physics ,
- ❖ Students' attitudes to physics oriented career courses ,
- ❖ Effects of students' science background on their attitudes to physics ,
- ❖ Comparative analysis of students' attitudes to physics and their attitudes to other science related subjects ,
- ❖ The influence of physics teacher - student relationship on students' attitudes to physics.

The analysis is presented as shown in table i to v.

### **RESEARCH QUESTION ONE**

What are the attitudes of secondary school students generally to the learning of physics ?

The answer to the research question one is illustrated in percentage in table i below.

Table i : students' general attitudes to the learning of physics .

S/NO	ITEMS	AGREED	%	DISAGREED	%
1 .	Physics lessons interest me a lot .	55.00	68.75	25.00	31.25
2.	I love physics calculations with passion.	30.00	37.50	50.00	62.50
3.	Physics. Practicals makes me excited.	67.00	83.75	13.00	16.25
4.	Physics class is fun.	48.00	60.00	32.00	40.00

Table i revealed the fact that 68.75% of the respondents agreed to the statement that physics lessons interest them a lot , though difficult to understand especially when dealing with the theoretical part particularly the calculations aspect of the subject . This was observed in the table as only 37.50% of the respondents agreed to the statement that they love physics calculations with passion. Table i also showed the fact that 83.75% of the respondents attested to the statement that physics practical makes them excited.

## **RESEARCH QUESTION TWO**

Do the attitudes of secondary school students to physics affect their interest in physics related careers?

The answer to the research question one is illustrated in percentage in table ii

Table ii Students' attitudes to physics related careers.

<b>S.NO</b>	<b>ITEMS</b>	<b>AGREED</b>	<b>%</b>	<b>DISAGREED</b>	<b>%</b>
1.	I do not think physics is worth a profession .	5.00	6.25	75.00	93.75
2.	I love physics related professions .	12.00	15.00	68.00	85.00
3.	I do not see physics relevance to everyday life and society .	9.00	11.25	71.00	88.75
4.	I do not see a bright future in physics careers.	2.00	2.50	78.00	97.50

From the analysis in table ii , it was revealed that 93.75% of the respondents disagreed with the statement that physics is not worth a profession , although , only 15.00% of the respondents agreed with the fact that they love physics related professions . Table ii also revealed the fact that 83.75% of the respondents disagreed with the statement that that they do not see physics relevance to everyday life and society . In addition , almost all the respondents ( 97.50% ) disagreed with the statement that they do not see a bright future in physics related careers .

### RESEARCH QUESTION THREE

Do the attitudes of secondary school students to physics result from their background in science ?

The answer to the research question three is illustrated in percentage in table iii

Table iii The effect of students' science background on their attitudes to physics .

S/NO	ITEMS	AGREED	%	DISAGREED	%
1.	I had a good science background	32.00	40.00	48.00	60.00
2.	I had a good primary school science teacher .	31.00	38.75	49.00	61.25
3.	I already had basic physics knowledge before I began senior secondary school.	48.00	60.00	32.00	40.00
4.	I never loved science in my junior secondary school days	25.00	31.25	55.00	68.75

From the analysis in table iii it was shown that 60.00% of the respondents disagreed with the statement that they had a good science background .In a similar manner, 61.25% of the respondents disagreed with the statement that they had good

primary school science teacher .However, 60.00% of the respondents agreed that they already had basic physics knowledge before their entrance into senior secondary school. Nevertheless, 68.75% of the respondents disagreed with the statement that they never loved science in their junior secondary school days while 31.25% agreed.

#### **RESEARCH QUESTION FOUR**

Are the attitudes of secondary school students to physics generally the same with their attitudes to other science related subjects?

The answer to the research question four is illustrated in percentage in table iv .

Table iv: Comparative analysis of the attitudes of secondary school students' to physics and their attitudes to other science subjects.

S/No	ITEMS	AGREED	%	DISAGREED	%
1.	Physics and chemistry should be given equal attention .	77.00	96.25	3.00	3.75
2.	I love physics and biology with equal passion .	40.00	50.00	40.00	50.00
3.	Physics and mathematics have the same level of difficulty .	53.00	66.25	27.00	33.75
4.	Physics is as simple as any other science subject.	4.00	5.00	76.00	95.00

From the analysis in table iv, it was revealed that 96.25% of the respondents agreed to the statement that physics and chemistry should be given equal attention. However, 3.75% of the respondents opposed the view that physics and chemistry should be attended to equally.

Furthermore, table iv shows that equal number of the respondents both agreed and disagreed to the statement that they love physics and biology with equal passion. The analysis also showed the fact that 66.25% of the respondents agreed to the statement that physics and mathematics have the same level of difficulty.

However, from the table , there was an indication that physics is more difficult than any other science subject as 95.00% of the respondents disagreed to the statement that physics is as simple as any other science subject .

### RESEARCH QUESTION FIVE

Are the attitudes of secondary school students to physics influenced by the physics teacher - student relationship?

The answer to the research question five is illustrated in percentage in table v .

Table v: Influence of physics teacher - student relationship on secondary school students' attitudes to physics .

S/No	ITEMS	AGREED	%	DISAGREED	%
1.	I love my physics teacher's attitude.	56.00	70.00	24.00	30.00
2.	My physics teacher allows me to ask questions in class.	55.00	68.75	25.00	31.25
3.	My physics teacher of to guides me on how I could be successful in physics.	56.00	70.00	24.00	30.00
4.	My physics teacher's lesson is lively.	57.00	71.25	23.00	28.75

The analysis in table v showed the fact that 70.00% of the respondents loved their physics teachers' attitudes while 30.00% are

of opposite view. There was also a confirmation from the analysis in table v that physics teachers allow questions in their classes as indicated by the 70.00% of the respondents that agreed to the statement that their physics teachers allow them to ask questions in class.

Finally, the analysis in table v showed that 71.25% of the respondents attested to the statement that their physics teachers' lessons are lively.

## **DISCUSSION OF FINDINGS**

Research question one was raised to find out the general attitudes of secondary school students to the learning of physics. Analysis showed that students are scared of mathematical problems in physics and wished calculations were not part of the subject. This challenge is responsible for the low interest of students in physics lessons as they have conceived the subject as the most problematic area in the realm of science. In addition, there was an indication from the analysis that the students are always excited whenever physics practicals are taught. This finding agrees with the position of NTI (2007) that suggested the activity oriented method as the best strategy for teaching physics.

Research question two was raised to find out if or not the attitudes of secondary school students to physics affect their interest in physics related careers. Results from the analysis showed that the students do not love physics related professions, though, they did not show any negative perception about physics related professions, though, and they did not show any negative perception toward physics related careers.

Research question three was raised to find out whether or not the student's science background influences their attitudes to physics. Analysis showed that the teaching and learning of science at pre-secondary level in Nigeria is poor. There are so many unqualified teachers in primary schools who cannot communicate the excitement of science to primary school pupils.

Research question four was raised to find out if or not the attitudes of secondary school students to physics is generally the same with their attitudes to other science subjects. Analysis should that the students' view physics to be more difficult than any other science subject. Also, physics and mathematics are seen by the students to have the same level of difficulty. By implication, one could state that a students with poor mathematical orientation will most likely find physics very difficult.

Research question five was raised in order to investigate the influence of physics teacher – student relationship on the attitudes of secondary school students to physics.

Analysis indicates that physics teachers in secondary schools relate well with their students during lessons.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.0 INTRODUCTION**

This chapter summarizes the previous chapters. It also draws conclusion from the findings which at the same time constitute the discovery of the research. However, recommendations are presented in line with the conclusion.

#### **5.1 SUMMARY OF FINDINGS**

This research was embarked upon to examine the attitudes of secondary school students to physics. The research focused on secondary schools in Egor Local Government Area of Edo State. Hence, the research was divided into five chapters with the focus of each chapter summarized below.

Chapter one dwelled mainly on introduction of the research, the statement of the problem, the purpose of the study, the research questions to guide the study, the scope of the study, the assumptions of the study and definition of related terms.

However, chapter two focuses on the review of related literature of the study. In this chapter, emphasis was on the concept

of attitudes, concept of physics, methods of teaching physics, instructional aids for physics teaching and physics teachers' attitudes.

Moreover, chapter three focuses on research methodology. Here, emphasis was on research design, population of the study, sample and sampling techniques, instrumentation under which validity and reliability of the instrument was considered. The method of data collection and method of data analysis were also considered. Moreover, chapter four is on data presentation, analysis, and interpretation of result and discussion of findings in relation to the research.

Finally, the current chapter draws the end of the study with summary, conclusion and recommendations based on the findings. This investigation further observed that students in secondary schools find physics practicals very interesting. From the findings of this research, it is observed that secondary school students are finding the mathematical aspect of physics very difficult.

## **5.2 CONCLUSION**

From the findings of this study, it was established that students have high interest in physics - oriented career courses. However, the poor performance of secondary school students in physics was found to be basically due to their inability to tackle mathematical problems in physics. This set back is militating against the students interests in physics. Furthermore, the findings also revealed that the students could see the relevance of physics to everyday life and society.

## **5.3 RECOMMENDATIONS**

It has been observed that certain factors are responsible for the dwindling interests of secondary school students towards physics. It is therefore imperative that a positive step be taken towards tackling these challenges in order to ensure an increased positive attitudes of secondary school students to physics.

Firstly, prospective studies should be conducted based on a much wider sample and within the context to provide better understanding of the subject.

Secondly, the teachers and students have to adjust to new roles which may lead to changes of physics classroom processes

which in turn affect the relationship between the physics teacher and the students during classroom teaching.

Thirdly, physics laboratories should be adequately equipped. Upon equipping of the laboratories, physics class room teachings should be dominated with practicals .Also, physics teachers in secondary schools should strive to ensure that they teach physics by doing and minimize the traditional lecture method. Physics practicals has been observed to boost students' positive attitudes to physics classes.

Lastly, guidance should be provided to the students on the significance of mathematics as an instrument of communication. This would lead the students toward appreciating mathematical calculations in physics and would eventually raise the students'positive attitudes to physics.

#### **5.4 IMPLICATIONS OF THE STUDY**

The teaching and learning of physics is paramount to the development of science and technology in Nigeria.Secondary school students must appreciate this subject if the future of science in Nigeria is to be guaranteed.

Most importantly is the fact that physics as a fundamental science subject must be widely accepted by secondary school students in order to ensure that the future of science and technology in Nigeria is not taken for granted. This study was therefore streamlined along this vision to examine the attitudes of secondary school students to physics.

#### **5.5 SUGGESTIONS FOR FURTHER STUDIES**

This study has revealed the factors responsible for the dwindling interest of secondary school students to physics. It is therefore suggested that further studies be undertaken on each of these factors. This could go away in fostering the interests of students in physics, promoting the teaching and learning of the subject. Though, the questionnaire for this study was structured, it can be made open-ended to welcome more opinions.

Also, the research can be extended to include physics teachers in secondary Schools and to physics students in Education Faculties across some selected universities where the future physics teachers are made.

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## APPENDIX

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY AND  
CURRICULUM STUDIES  
FACULTY OF EDUCATION  
UNIVERSITY OF BENIN  
BENIN CITY.

### QUESTIONNAIRE

TOPIC: ATTITUDES OF SECONDARY SCHOOL STUDENTS TO  
PHYSICS

Dear respondent,

This questionnaire was designed to examine the attitudes of secondary school students to physics in Egor Local Government Area of Edo State .Kindly supply the correct information as regard the your attitude to physics .

Please , respond appropriately by ticking [  $\sqrt{\quad}$  ] in the boxes provided and filling the blank spaces where necessary . Your response will be strictly confidential . Thanks for your anticipated cooperation .

**PART A** ( student's personal data ).

1. Name of School : .....
2. (A ) Gender : Male (    )                  Female (    )  
( B ) Age :.....,.....  
( C ) Class : .....

**PART B** ( students' opinions on the topic )

SA for strongly Agree , A for Agree SD for Strongly Disagree.

S / No	ITEMS	S A	A	SD	D
1.	Physics lessons interest me a lot.				
2.	I love physics calculations with passion.				
3.	Physics practicals makes me excited.				
4.	Physics class is fun.				
5.	I do not think physics is worth a profession.				
6.	I love physics related professions.				
7.	I do not see physics relevance to everyday and society .				
8.	I do not see a bright future in physics careers.				
9.	I had a good science background.				
10.	I had a good primary school science teacher.				
11.	I already had basic physics knowledge before I began senior secondary school.				
12.	I never loved science in my Junior secondary school days.				
13.	Physics and chemistry should be given equal attention.				
14.	I love physics and biology with equal passion.				
15.	Physics and mathematics have the same level of difficulty.				
16.	Physics is aa simple as any other science subject.				
17.	I love my physics teacher's attitudinising				
18.	My physics teac allows me to ask questions in class.				
19.	My physics teacher often guides me in how I could be successful in physics				
20.	My physics teacher's lesson is lively.				